U.S. DEPARTMENT OF ENERGY | Office of Indian Energy

National Strategy on the Arctic Region (NSAR) – Ten Year Renewable Energy Strategy

DRAFT Plan

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Ten Year Renewable Energy Plan for the Arctic

Background

The National Strategy on the Arctic Region (NSAR) outlines the United States Government's strategic priorities for the Arctic region. These priorities are intended to position the United States to respond effectively to emerging opportunities – while simultaneously pursuing efforts to protect and conserve this unique environment.

More than 20 different federal agencies and organizations are responsible for existing policy structure, and defining roles and responsibilities of the NSAR implementation plan. The Department of Energy (DOE) Office of Indian Energy is responsible for the section of the NSAR which involves the development of a ten year renewable energy plan for the Arctic region. This effort captures existing energy planning and development activities within the context of renewable energy and energy efficiency, identifies gaps or areas appropriate for federal agency engagement as stated in Executive Order 13175 on Tribal Consultation and January 2015 Executive Order on Arctic coordination.

Other Arctic Strategy Efforts

This project is limited in its focus to developing a ten year renewable energy plan for the Arctic region, and the plan attempts to acknowledge, support and leverage coordination among other Arctic strategy efforts. Special consideration is given to the Alaska State Arctic Policy Commission's work toward adoption of its implementation strategy, and those priorities relating to energy are considered throughout this plan with the goal of mutual support, coordination and best use of limited resources. It is noteworthy that certain state lines of effort compliment and mirror federal priorities in this document. These include:

- workforce development and training
- innovative technology development and application
- basic infrastructure upgrades such as sewer, water and sanitation
- science-based decision making
- energy and power testing and research

As appropriate, coordination with federal agencies tasked with other NSAR efforts is underway in addition to the U.S. Arctic Research Commission and any efforts relevant to development of renewable energy. NSAR efforts will also support the 2015-2017 U.S. chairmanship of the Arctic Council.

Priority Areas, and DRAFT Vision and Goals

When asked, "Ten years from now, what are the elements of a successful renewable energy plan in the Arctic?" a number of themes emerged that were then used to develop DRAFT vision and

goal statements. The next step is to gather public input on the DRAFT ten year plan with final revisions in spring 2015.

(DRAFT) Vision Statement

> By 2025, the U.S. Arctic has maximized available renewable resources by integrating micro-grid, hybrid-system technology into isolated communities; prioritized efficiency, weatherization and forward-looking research and technology expertise; and has developed a sustainable local workforce while coordinating at all levels throughout the process.

Priority Area #1 - Innovative technology/Research & Development

Most Arctic communities are powered by stand-alone systems without the economic and reliability benefits of an electrical grid. There have been a number of failed renewable energy projects that have not considered the unique Alaska situation, and more appropriate technologies should be developed. Alaska could prove as a successful testing location for developing Arctic energy solutions that also could be exported internationally.

DRAFT 2025 Goal(s):

- Renewable resources are maximized through appropriate new technologies that support small-scale integrated energy systems without access to an electrical grid by concurrently optimizing existing infrastructure and integrating these advances

Priority #2 - Training and Workforce

There is a significant concern over adequate training and workforce that is appropriately organized and equipped to operate and maintain renewable energy systems. Local capacity is limited to operate and maintain existing energy systems, most of which are older technology. Adding renewable systems to the mix without robust training and/or capacity building can exacerbate the challenge.

DRAFT 2025 Goal(s):

- The workforce for constructing, maintaining and operating sustainable energy systems has been developed through training local community members while establishing a robust regional system for keeping all systems operational.
- The challenge of maintaining and operating local energy systems has been addressed by successfully developing new models of operations and maintenance of existing and any new technologies.
- Concepts to bolster regional capacity are explored, such as mobile technical and repair training

Priority Area #3 - Basic infrastructure/Hybrid systems

Renewable energy only makes sense if the supporting infrastructure is intact. Because rural Alaska communities operate on stand-alone systems, in the long term diesel generation or some other hybrid fossil/renewable system is a practical expectation when considering how renewables can be successful in ten years. While renewable energy is a desirable goal, reliable basic infrastructure must be included in the plan. Sustainability of existing and new energy systems must be a priority.

DRAFT 2025 Goal(s):

- Successful renewable energy systems assure basic supporting infrastructure is intact and adequately operated/maintained by qualified staff before adding renewable infrastructure, and all interconnections are concurrently addressed.

Priority Area #4 - Coordination

Arctic stakeholders and tribal leaders would like more information about what they can expect from other federal agencies working on other elements of the NSAR and how they are all coordinating. Coordination of all efforts including local entities, regional, statewide, federal and international is a need that was consistently voiced through the public input process. Project development should have increased coordination at all levels.

DRAFT 2025 Goal(s):

- Renewable resources are more accessible and affordable to Arctic communities through comprehensive community and regional energy planning
- Coordination at local communities, regional, state and federal levels has leveraged opportunities for successful deployment of renewable energy systems in Arctic communities
- Energy infrastructure effectively supports defense, homeland security and economic development
    - DOE efforts support all three areas through expanded DOE Alaska capacity building, research and interagency cooperation

Priority Area #5 – Energy Efficiency

While the focus of this report is on developing renewable energy, there is an interdependence with energy efficiency activities. Improvements to both supply and demand through energy efficiency not only reduce costs but also make renewable energy goals more achievable. Investing in energy efficiency measures is usually the quickest and most cost effective way to impact household, business, or community energy costs. Savings can be reinvested into other energy projects such as the development of renewable energy generated power and heat. At the same time, the reduced demand due to efficiency improvements also enhances community resilience.

In recent years there have been numerous programs from state and federal partners to help small and medium size building owners, both public and private, have energy audits done. The critical next step is assisting these same building owners through the project development and financing process to turn the audit recommendations into realized cost savings.

DRAFT 2025 Goals(s):

- Require federal facility construction in the Arctic to meet efficiency standards resulting in 50% renewable or net zero buildings.
- Encourage the adoption of statewide energy efficiency building codes for all non-residential buildings.
- Support mechanisms that bridge the gap between energy and cost saving measures identified in building energy audit.
- Support/encourage/facilitate streetlight retrofits in every rural community.

DRAFT Recommendations

This DRAFT plan considers how these priority areas, as identified by Alaskans, can best be supported. Existing federal, state, tribal and local programs that specialize in addressing these areas have been identified in this plan document. The following recommendations are made to support a ten year renewable energy plan for the Arctic.

1. Continue ongoing regional energy planning efforts while supporting technical assistance for community energy planning, both of which support the opportunity for coordination.
2. Identify best practices and update new methods for developing a workforce that matches current and projected operations and maintenance of energy systems, projecting future needs.
3. Support Science, Technology and Education & Math (STEM) program targeting minorities in education in Alaska energy to develop current and future generations in these fields.
4. Support State Emerging Energy Technology Fund (EETF) with renewed focus on new micro-grid technology development and deployment appropriate for Arctic communities.
5. Leverage ARPA-e opportunities and national laboratory integration through partnerships with Alaska institutions, specifically Iligsavik, Alaska's only tribal college with the goal of coordinating state and federal resources around the common goal of micro-grid development and other emerging technologies for the Arctic.
6. Support State Renewable Energy Fund (REF) as a framework for ongoing state support for developing renewable energy projects.
7. Federal and State support for Denali Commission/AEA programs for fund basic infrastructure designed energy-wise.
8. Encourage energy efficiency as a first step in community and regional energy plans, including the development of renewable energy for power and heat.
9. Consider the value of locally source resources to heat homes such as biomass or clean coal.
10. Increase the DOE presence in the Arctic to orchestrate NSAR plan, existing legacy management, Indian energy and office of Fossil Energy.